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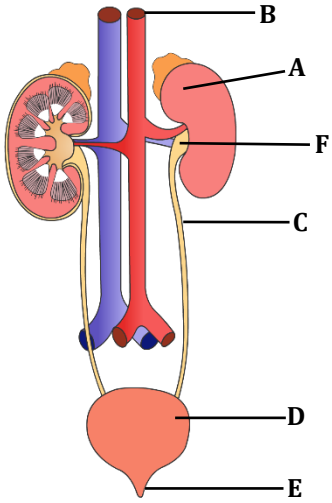
Exercise - I (Conceptual Questions) Build Up Your Understanding

EXCRETORY MATTER, KIDNEY, NEPHRON

1. In the diagram of excretory system of human beings given below, different parts have been indicated by alphabets choose the answer in which these alphabets have been correctly matched with the parts which they represent:-



(1) A = Kidney, B = Dorsal aorta, C = Ureter, D = Urinary bladder, E = Urethra, F = Renal pelvis

(2) A = Kidney, B = Dorsal aorta, C = Urethra, D=Urinary bladder, E=Ureter, F=Renal pelvis

(3) A = Kidney, B = Renal pelvis, C = Urethra, D=Urinary bladder, E=Ureter, F=Renal pelvis

(4) A = Kidney, B = Dorsal aorta, C = Urethra, D=Urinary bladder, E=Renal pelvis, F=Ureter

2. Nitrogenous waste products are eliminated mainly as -

(1) Urea in tadpole & ammonia in adult frog

(2) Ammonia in tadpole and urea in adult frog

(3) Urea in both tadpole & adult frog.

(4) Urea in tadpole and uric acid in adult frog.

3. Ammonia is the main nitrogenous excretory material in

(1) Amphibians

(2) Aves

(3) Tadpoles

(4) Reptiles

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4. The blood vessel taking blood towards Bowman's capsule is

(1) Afferent arteriole (2) Efferent arteriole

(3) Renal vein (4) Renal portal vein.

5. Each kidney of an adult human measures :-

	Length	Width	Thickness	Weight
(1)	10-12 cm	5-7 cm	2-3 cm	120-170 gm
(2)	10-20 cm	10-12 cm	6-12 cm	40-50 gm
(3)	2-6 cm	10-12 cm	6-12 cm	40-50 gm
(4)	10-20 mm	5-7 mm	2-3 cm	120-170 mg

6. Read the following statements about human excretory system and choose the correct option accordingly.

I. Kidneys are reddish brown and bean-shaped structure.

II. Kidneys are situated between the last thoracic to third lumbar vertebra.

III. Each kidney of an adult human measures 10-12 cm in length, 5-7 cm in width, 2-3 cm thickness, and average weight 120-170 gram.

(1) I and II (2) II and III

(3) III and I (4) All

7. Excretion is-

(1) Removal of substances required by body

(2) Removal of useless substances and substances present in excess

(3) Formation of substances having some role in body

(4) 1 and 2 both

8. In mammals the urinary bladder opens into

(1) Uterus (2) Urethra

(3) Vestibule (4) Ureter

9. Which of the following is not a function of kidney?

(1) Regulation of arterial pressure

(2) Excretion of metabolic waste and foreign chemicals.

(3) Secretion of hormones like erythropoietin and renin.

(4) Secretion of HCl and castle intrinsic factor (CIF).

10. Urea is derived from
(1) Fats (2) Amino acids
(3) Carbohydrates (4) Uric acid

11. Animals which excrete large amount of ammonia are
(1) Terrestrial (2) Amphibians
(3) Egg laying (4) Aquatic

12. Ureotelic animals are those in which the main nitrogenous waste product is
(1) Amino acids (2) Urea
(3) Uric acid (4) Ammonia

13. Excretory product of mammals is
(1) Salts (2) Glucose
(3) Urea (4) Ammonia

14. Malpighian corpuscles occur in
(1) Medulla (2) Cortex
(3) Pelvis (4) Pyramid

15. Brush border is characteristic of
(1) Neck of nephron
(2) Collecting tube
(3) Proximal convoluted tubule
(4) All the above

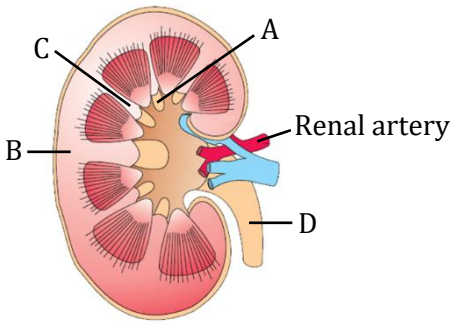
16. In cockroach, the excretory product is
(1) Ammonia (2) Uric acid
(3) Urea (4) Both 1 and 3

17. Ornithine cycle operates in
(1) Stomach (2) Pancreas
(3) Liver (4) Oral cavity

18. Ornithine cycle performs
(1) ATP synthesis
(2) Urea formation in spleen
(3) Urea formation in liver
(4) Urine formation in liver

19. Uriniferous tubules occur in
(1) Stomach (2) Testes
(3) Ovary (4) Kidney

20. Identify A to D in the given structure and choose the correct option accordingly.



(1) A-Calyx, B-Cortex, C-Renal column, D-Ureter
(2) A-Calyx, B-Cortex, C-Renal column, D-Urethra
(3) A-Urethra, B-Cortex, C-Renal column, D-Calyx
(4) A-Urethra, B-Calyx, C-Renal column, D-Cortex

21. The two kidneys lie in man
(1) At the level of ovaries
(2) At the same level
(3) Left kidney at a higher level than the right one
(4) Right kidney at a higher level than the left one

22. Vasa recta are tubular capillaries around
(1) Posterior part of alimentary canal
(2) PCT
(3) Loop of Henle
(4) DCT

23. Diameter of the renal afferent vessel is
(1) Same as that of efferent
(2) Smaller than that of efferent
(3) Larger than that of efferent
(4) There is no efferent vessel

24. Choose the mismatched part of nephron with their function.
(1) Bowman's capsule-Glomerular filtration
(2) PCT-Reabsorption of Na^+ and K^+
(3) DCT-Reabsorption of glucose
(4) Loop of Henle-Urine concentration

25. A notch present on the medial side of kidney is known as
(1) Ureter (2) Pelvis
(3) Hilus (4) Pyramid

26. Which is false
(1) Nephron-Excretion
(2) Alveoli-Respiration
(3) Kidney-osmoregulation
(4) None of these

27. The snakes living in deserts are mainly
(1) Ammonotelic (2) Aminotelic
(3) Ureotelic (4) Uricotelic

28. Which one is not the function of kidney?
(1) Osmoregulation (2) Salt retention
(3) Excretion (4) Synthesis of urea

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29. Ammonia is the chief excretory substance in
(1) Camel and whale
(2) Cartilaginous fishes
(3) Whale and Tortoise
(4) Fresh water fishes

30. One of the following excrete urea
(1) Snakes (2) Birds
(3) Insects (4) Mammals

31. Uric acid excretion is an adaptation for
(1) Water conservation (2) Water removal
(3) Osmoregulation (4) None

32. NH_3 is
(1) Less toxic (2) Toxic
(3) Highly toxic (4) None

33. Out of the four parts given below, which parts play significant role in forming concentrated urine in human ?
I. Loop of Henle II. Glomerulus
III. Bowman's capsule IV. Vasa recta
The correct option is
(1) I and II (2) III and IV
(3) II and III (4) I and IV

34. Which is absent in Glomerular filtrate?
(1) Blood corpuscles (2) Fats
(3) Proteins (4) All

35. Urine formed by nephrons is ultimately carried to ....A... where it is stored till a voluntary signal is given by the ...B... . This signal is initiated by ...C... of urinary bladder. Choose the correct option for A, B and C.
(1) A-Urethra, B-CNS, C-PNS
(2) A-Urinary bladder, B-CNS, C-stretching
(3) A-Urethra, B-CNS, C-Stretching
(4) A-Urethra, B-CNS, C-ANS

36. Conversion of ammonia to urea is done by..... Cycle -
(1) Ornithine cycle
(2) Arginine cycle
(3) Fumaric cycle
(4) Citrulline cycle

37. The movement of Ions against the concentration gradient will be-
(1) Active transport (2) Osmosis
(3) Diffusion (4) All

38. Correct order of excretory organs in Cockroach, Earthworm and Rabbit respectively :–
(1) Skin, malpighi tubules, kidney
(2) Malpighi tubules, nephridia, kidney
(3) Nephridia, malpighi tubules, kidney
(4) Nephridia, kidney, green gland

39. Which one of the following body functions is not performed by kidneys?
(1) Excretion
(2) Osmoregulation
(3) Regulation of blood volume
(4) Destruction of dead blood corpuscles

40. Nitrogen is excreted in mammals in the form of :-
(1) Ammonium ion (2) Ammonia
(3) Uric acid (4) Urea

41. Which one of the four parts mentioned below does not constitute a part of a single uriniferous tubule?
(1) Bowman's capsule
(2) Distal convoluted tubule
(3) Loop of Henle
(4) Collecting duct

42. Match the following :

(A)		(B)	
A	Loop of Henle	1	Carries blood to the kidney
B	Renal artery	2	Area where a considerable amount of reabsorption takes place
C	Proximal convoluted tubule	3	Main area of K^+, H^+ secretion
D	Glomerulus	4	Filtration of blood
E	Distal convoluted tubule	5	Plays a role in concentration of urine

The correct pairing sequence is :
(1) 5,1,2,4,3 (2) 5,1,2,3,4
(3) 1,5,3,4,2 (4) 2, 1, 3, 5, 4

43. Which of the following is not a function of kidneys?
(1) Regulation of blood pressure
(2) Removal of urea
(3) Regulation of acidity of fluids
(4) Secretion of antibiotics

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44. Aquatic reptiles are :
(1) Ammonotelic
(2) Ureotelic over land
(3) Ureotelic
(4) Ureotelic in water

45. During micturition :
(1) Urethra relaxes (2) Ureter contracts
(3) Ureter relaxes (4) Urethra contracts

46. Which of the following are uricotelic animals?
(1) Rohu and Frog
(2) Lizard and Crow
(3) Camel and Frog
(4) Earthworm and Eagle

47. Duct of Bellini opens on :
(1) Collecting duct (2) Ureter
(3) Renal papilla (4) DCT

48. Loop of Henle is associated with :-
(1) Excretory system
(2) Respiratory system
(3) Reproductive system
(4) Digestive system

49. Uric acid is the main excretory product in :-
(1) Insects (2) Earthworm
(3) Amphibians (4) Mammals

50. Which of the following is metabolic waste of protein metabolism?
(1) NH_3, urea and CO_2
(2) Urea, oxygen and N_2
(3) Urea, ammonia and alanine
(4) Urea, ammonia and creatine

51. The most abundant, harmful and universal waste product of metabolism is:
(1) CO_2 (2) Uric acid
(3) H_2O (4) C_2H_5OH

52. Blood vessel leading into Bowman's capsule are called :-
(1) Renal vein
(2) Renal artery
(3) Efferent arteriole
(4) Afferent arteriole

PHYSIOLOGY OF URINE FORMATION

53. A man has taken large amount of protein in his diet. He will excrete more of
(1) Urea (2) Uric acid
(3) Sugar (4) Salts and water

54. Reabsorption of useful substances from glomerular filtrate occurs in
(1) Collecting tube
(2) Loop of Henle
(3) Proximal convoluted tubule
(4) Distal convoluted tubule

55. Occurrence of excess urea in blood due to kidney failure is
(1) Urochrome (2) Uraemia
(3) Uricotelism (4) Ureotelism

56. Total filtrate formed in 24 hours in human kidney is
(1) 1.8 litres (2) 8.0 litres
(3) 18 litres (4) 180 litres

57. In kidney glomerulus is involved in
(1) Reabsorption of salts
(2) Urine collection
(3) Urine formation by blood filtration
(4) Tubular secretion

58. The mechanism of urine formation in nephron involves -
(1) Ultrafiltration (2) Reproduction
(3) Diffusion (4) Osmosis

59. Glucose is taken back from glomerular filtrate through
(1) Active transport (2) Passive transport
(3) Osmosis (4) Diffusion

60. Reabsorption of chloride ions from glomerular filtrate in kidney tubule occurs by
(1) Active transport
(2) Diffusion
(3) Osmosis
(4) Brownian movement

61. Main functions of kidney is
(1) Passive absorption
(2) Ultrafiltration
(3) Selective reabsorption
(4) Both 2 and 3

62. The afferent arteriole diameter is more than efferent arteriole helps in :–
(1) More blood flow to efferent arteriole
(2) Creating lower pressure in glomerulus
(3) Creating higher pressure in glomerulus
(4) Tubular secretion

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63. Which part of nephron is affected by aldosterone?
(1) P.C.T. (2) Late part of C.T.
(3) D.C.T. (4) Duct of Bellini

64. Concentration of urine depends upon which organ-
(1) Bowman's capsule
(2) Length of Henle's loop
(3) P.C.T.
(4) Network of capillaries arising from glomerulus

65. Which one does not filter out from blood to Bowman's capsule in glomerular ultrafiltration?
(1) Amino acids (2) Polypeptide
(3) Glucose (4) Fatty acids

66. The net pressure gradient that causes the fluid to filter out of the glomeruli into the capsule is –
(1) 10-25 mm Hg (2) 50-80 mm Hg
(3) 80-100 mm Hg (4) 30-50 mm Hg

67. Haemodialysis helps in the patient having :
(1) Uremia (2) Anaemia
(3) Diabetes (4) goitre

68. Water reabsorption in the distal parts of kidney tubules is regulated by :
(1) STH (2) TSH (3) ADH (4) MSH

69. Due to insufficient filtration in the Bowman's capsule, all are likely to happen except :
(1) Accumulation of fluid in the body
(2) Increase in blood pressure
(3) Increase in blood urea level
(4) Loss of glucose through urine

70. Urinary excretion of Na^+ is regulated by :
(1) Anterior pituitary
(2) Posterior pituitary
(3) Adrenal cortex
(4) Adrenal medulla

71. In the kidney, the formation of urine involve the following processes arranged as
(1) Glomerular filtration, reabsorption and tubular secretion
(2) Reabsorption, filtration and secretion
(3) Secretion, absorption and filtration
(4) Filtration, secretion and reabsorption

72. What for the ascending limb of Loop of Henle is permeable?
(1) Glucose (2) NH_3
(3) Na^+ (4) Water

73. If ADH level of blood is less :-
(1) Volume of urine increases
(2) Volume of urine decreases
(3) Volume of urine is normal
(4) Volume of urine is unaffected

74. Human urine as compared to human blood is normally :-
(1) Hypotonic (2) Hypertonic
(3) Isotonic (4) All of these

75. Main function of glomerulus is :-
(1) Filtration of blood
(2) Reabsorption of H_2O
(3) Reabsorption of Na^+
(4) Concentration of urine

76. Absorption of H_2O in DCT is controlled by :-
(1) ADH (2) ACTH
(3) Rennin (4) Oxytocin

77. Glomerular hydrostatic pressure is present in-
(1) Tubule of kidney
(2) Bowman's capsule
(3) Glomerulus of uriniferous tubule
(4) Malpighian tubule

78. Absorption of Na^+ and K^+ ions does not occur in-
(1) Bowman's capsule
(2) Loop of Henle
(3) distal convoluted tubule
(4) Proximal convoluted tubule

79. Liquid which collects in the cavity of Bowman's Capsule is :-
(1) Blood plasma minus blood proteins
(2) Glycogen and water
(3) Urea, glycogen and water
(4) Urea

80. Loop of Henle is primarily meant for absorption of :-
(1) Potassium (2) Glucose
(3) Urea (4) Water

81. Blood dialysis is called :
(1) Artificial lung (2) Artificial kidney
(3) Artificial heart (4) Artificial brain

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82. The complete reabsorption of glucose takes place in :-
(1) Collecting tubule
(2) Distal tubule
(3) Proximal convoluted tubule
(4) Henle loop

REGULATION OF KIDNEY FUNCTION AND DISEASES

83. A condition of failure of kidney to form urine is called -
(1) Creatinine (2) Hematuria
(3) Anuria (4) Ketonuria

84. Diuresis is the condition in which
(1) The excretion of volume of urine increases
(2) The excretion of volume of urine decreases
(3) The kidney fails to excrete urine
(4) The water balance of the body is disturbed.

85. Which type of kidneys are found in amphibian?
(1) Holonephric (2) Mesonephric
(3) Pronephric (4) Metanephric

86. In diabetes insipedus the patient drinks more water as there is urinary loss of
(1) Salt (2) Insulin
(3) Protein (4) Water

87. Uremia is a disease when there is an excess of
(1) Cholesterol in the blood
(2) Glucose in the blood
(3) Urea in the blood
(4) Urea in urine

88. Ketonuria is
(1) Albumin in urine
(2) Globulin in urine
(3) Ketone bodies in urine
(4) None of the above

89. Characteristic smell of urine is due to :-
(1) Urea (2) Uric acid
(3) Urinode substance (4) Pus

90. Stimulation of voiding of urine occur in bladder at :–
(1) 600 ml. (2) 220 ml.
(3) 300 ml. (4) 400 ml.

91. Which substance is used mainly in kidney function test?
(1) Glucose (2) Na^+
(3) Inulin (4) Urea

92. The appearance of albumin in the urine is most likely due to :
(1) Increase in the blood pressure
(2) Decrease in the blood osmotic pressure
(3) Damage to the Malpighian corpuscles
(4) Damage to the proximal convoluted tubules

93. Kidney crystals are solid clusters of :
(1) Calcium nitrate and uric acid
(2) Calcium phosphate and uric acid
(3) Calcium carbonate and uric acid
(4) Calcium metabisulphite and uric acid

94. Identify the correct set of statements :
(a) Bowman's capsule along with Glomerulus is called Malpighian body or renal corpuscle
(b) PCT is the most coiled part of nephron.
(c) Malpighian corpuscles PCT and henle's loop of nephron are situated in the cortical part of kidney
(d) In juxta medullary nephrons the loop of henles is very long and runs deep into the medulla.
(e) A minute vessels of peritubular capillary network runs antiparallel to the Henle's loop called vasa recta.
(1) a, b and d only (2) a, c and e only
(3) a, b, c and e only (4) c, d and e only

95. Why do we pass more urine in wet and cold season ?
(1) Impairment of water absorption by nephrons
(2) Kidney becomes more active
(3) Sweating is much decreased
(4) ADH secretion is increased

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EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	2	3	1	1	4	2	2	4	2	4	2	3	2	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	2	3	3	4	1	3	3	3	3	3	4	4	4	4	4
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	1	3	4	4	2	1	1	2	4	4	4	1	4	1	1
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	2	3	1	1	1	1	4	1	3	2	4	3	1	1	2
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	4	3	3	2	2	1	1	3	4	3	1	3	1	2	1
Question	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Answer	1	3	1	1	4	2	3	3	1	2	4	3	3	3	2
Question	91	92	93	94	95										
Answer	3	3	2	1	3										

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Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT 2006

1. Angiotensinogen is a protein produced and secreted by –
(1) Macula densa cells
(2) Endothelial cells (cells lining the blood vessels)
(3) Liver cells
(4) Juxtaglomerular (JG) cells

AIPMT 2007

2. A person who is on a long hunger strike and is surviving only on water, will have :-
(1) Less urea in his urine
(2) More sodium in his urine
(3) Less amino acids in his urine
(4) More glucose in his blood

AIPMT 2008

3. Consider the following four statement (a–d) about certain desert animals such as kangaroo rat :-
(a) They have dark colour and excrete solid urine
(b) They do not drink water, breathe at a slow rate to conserve water and have their body covered with thick hairs
(c) They feed on dry seeds and do not require drinking water
(d) They excrete very concentrated urine and do not use water to regulate body temperature
Which two of the above statements for such animals are ***true*** ?
(1) c and a (2) a and b
(3) c and d (4) b and c

AIPMT 2009

4. Uric acid is the chief nitrogenous component of the excretory products of :-
(1) Frog (2) Man
(3) Earthworm (4) Cockroach

5. What will happen if the stretch receptors of the urinary bladder wall are totally removed?
(1) There will be no micturition
(2) Urine will not collect in the bladder
(3) Micturition will continue
(4) Urine will continue to collect normally in the bladder

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AIPMT-Pre 2010

6. *Which* one of the following statements in regard to the excretion by the human kidneys is *correct?*
(1) Ascending limb of Loop of Henle is impermeable to electrolytes
(2) Descending limb of Loop of Henle is impermeable to water
(3) Distal convoluted tubule is incapable of reabsorbing HCO_3^-;
(4) Nearly 99 per cent of the glomerular filtrate is reabsorbed by the renal tubules

7. The principal nitrogenous excretory compound in humans is synthesised:-
(1) in the liver, but eliminated mostly through kidneys
(2) in kidneys but eliminated mostly through liver
(3) in kidneys as well as eliminated by kidneys
(4) in liver and also eliminated by the same through bile

AIPMT-Pre 2011

8. Which one of the following is not a part of a renal pyramid ?
(1) Peritubular capillaries
(2) Convoluted tubules
(3) Collecting ducts
(4) Loops of Henle

9. Which one of the following correctly explains the function of a specific part of a human nephron?
(1) *Podocytes*: Create minute spaces (slit pores) for the filtration of blood into the Bowman's capsule
(2) *Henle's loop*: most reabsorption of the major substances from the glomerular filtrate
(3) *Distal convoluted tubule*: reabsorption of K^+ ions into the surrounding blood capillaries
(4) *Afferent arteriole*: carries the blood away from the glomerulus towards renal vein.

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10. Uricotelic mode of passing out nitrogenous wastes is found in :-
(1) Reptiles and Birds
(2) Birds and Annelids
(3) Amphibians and Reptiles
(4) Insects and Amphibians

11. Which one of the following statements is correct with respect to kidney function regulation ?
(1) When someone drinks lot of water, ADH release is suppressed.
(2) Exposure to cold temperature stimulates ADH release.
(3) An increase in glomerular blood flow stimulates formation of Angiotensin II.
(4) During summer when body loses lot of water by evaporation, the release of ADH is suppressed.

AIPMT-Pre 2012

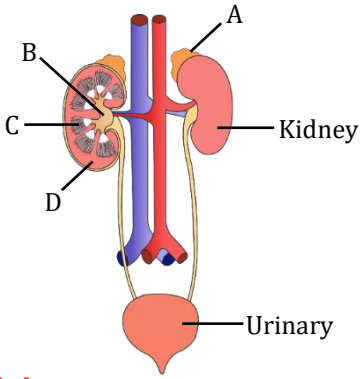
12. The maximum amount of electrolytes and water (70 – 80 percent) from the glomerular filtrate is reabsorbed in which part of the nephron?
(1) Proximal convoluted tubule
(2) Descending limb of loop of Henle
(3) Ascending limb of loop of Henle
(4) Distal convoluted tubule

AIPMT-Mains 2012

13. A fall in glomerular filtration rate (GFR) activates:
(1) adrenal medulla to release adrenaline
(2) posterior pituitary to release vasopressin
(3) juxta glomerular cells to release renin
(4) adrenal cortex to release aldosterone

NEET-UG 2013

14. Figure shows human urinary system with structures labelled A to D. Select option which correctly identifies them and gives their characteristics and/or functions: -



(1) D-Cortex - outer part of kidney and do not contain any part of nephrons
(2) A-Adrenal gland - located at the anterior part of kidney. Secrete Catecholamines which stimulate glycogen breakdown
(3) B-Pelvis - broad funnel shaped space inner to hilum, directly connected to loops of Henle
(4) C-Medulla-inner zone of kidney and contains complete nephrons

AIPMT 2015

15. Removal of proximal convoluted tubule from the nephron will result in:
(1) More concentrated urine
(2) No change in quality and quantity of urine
(3) No urine formation
(4) More diluted urine

Re-AIPMT 2015

16. Human urine is usually acidic because :
(1) hydrogen ions are actively secreted into the filtrate.
(2) the sodium transporter exchanges one hydrogen ion for each sodium ion, in peritubular capillaries.
(3) excreted plasma proteins are acidic
(4) potassium and sodium exchange generates acidity

NEET-I 2016

17. In mammals, which blood vessel would normally carry largest amount of urea ?
(1) Renal Vein (2) Dorsal Aorta
(3) Hepatic Vein (4) Hepatic Portal Vein

NEET-II 2016

18. The part of nephron involved in active reabsorption of sodium is :-
(1) Bowman's capsule
(2) Descending limb of Henle's loop
(3) Distal convoluted tubule
(4) Proximal convoluted tubule

NEET(UG) 2017

19. A decrease in blood pressure / volume will not cause the release of :-
(1) Atrial natriuretic factor
(2) Aldosterone
(3) ADH
(4) Renin

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20. Which of the following statements is **correct**?
(1) The descending limb of loop of Henle is impermeable to water.
(2) The ascending limb of loop of Henle is permeable to water.
(3) The descending limb of loop of Henle is permeable to electrolytes.
(4) The ascending limb of loop of Henle is impermeable to water.

NEET (UG) 2018

21. Match the items given in Column I with those in Column II and select the ***correct*** option given below:-

	Column I		**Column II**
a.	Glycosuria	i.	Accumulation of uric acid in joints
b.	Gout	ii.	Mass of crystallised salts within the kidney
c.	Renal calculi	iii.	Inflammation in glomeruli
d.	Glomerular nephritis	iv.	Presence of glucose in urine

	a	**b**	**c**	**d**
(1)	iii	ii	iv	i
(2)	i	ii	iii	iv
(3)	ii	iii	i	iv
(4)	iv	i	ii	iii

22. Match the items given in Column I with those Column II and select the ***correct*** option given below:-

	Column I (Function)		**Column II** (Part of Excretory System)
a.	Ultrafiltration	i.	Henle's loop
b.	Concentration of urine	ii.	Ureter
c.	Transport of urine	iii.	Urinary bladder
d.	Storage of urine	iv.	Malpighian corpuscle
		v.	Proximal convoluted tubule

	a	**b**	**c**	**d**
(1)	iv	v	ii	iii
(2)	iv	i	ii	iii
(3)	v	iv	i	ii
(4)	v	iv	i	iii

23. Uric acid is formed by: -
(1) Phospholipids (2) DNA or RNA
(3) Sphingolipids (4) Glycolipids

TG: @Chalnaayaaar

NEET-UG 2019

24. Which of the following factors is responsible for the formation of concentrated urine?
(1) Low levels of antidiuretic hormone.
(2) Maintaining hyperosmolarity towards inner medullary interstitium in the kidneys.
(3) Secretion of erythropoietin by juxtaglomerular complex.
(4) Hydrostatic pressure during glomerular filtration.

25. Use of an artificial kidney during hemodialysis may result in :-
(a) Nitrogenous waste build-up in the body
(b) Non-elimination of excess potassium ions
(c) Reduced absorption of calcium ions from gastro-intestinal tract
(d) Reduced RBC production
Which of the following options is the most **appropriate**?
(1) (a) and (b) are correct
(2) (b) and (c) are correct
(3) (c) and (d) are correct
(4) (a) and (d) are correct

NEET-UG 2019 (Odisha)

26. Match the following parts of a nephron with their function:-

(a)	Descending limb of Henle's loop	(i)	Reabsorption of salts only
(b)	Proximal Convoluted tubule	(ii)	Reabsorption of water only
(c)	Ascending limb of Henle's loop	(iii)	Conditional reabsorption of sodium ion and water
(d)	Distal convoluted tubule	(iv)	Reabsorption of ion, water and organic nutrients

Select the correct option from the following :
(1) (a)-(i), (b)-(iii), (c)-(ii), d-(iv)
(2) (a)-(ii), (b)-(iv), (c)-(i), d-(iii)
(3) (a)-(i), (b)-(iv), (c)-(ii), d-(iii)
(4) (a)-(iv), (b)-(i), (c)-(iii), d-(ii)

TG: @Chalnaayaaar

27. Match the items in Column-I with those in Column-II :-

Column-I	Column-II
(a) Podocytes	(i) Crystallised oxalates
(b) Protonephridia	(ii) Annelids
(c) Nephridia	(iii) Amphioxus
(d) Renal calculi	(iv) Filtration slits

Select the correct option from the following :
(1) (a)-(iii), (b)-(iv), (c)-(ii), d-(i)
(2) (a)-(iii), (b)-(ii), (c)-(iv), d-(i)
(3) (a)-(iv), (b)-(iii), (c)-(ii), d-(i)
(4) (a)-(iv), (b)-(ii), (c)-(iii), d-(i)

NEET (UG) 2020

28. Which of the following would help in prevention of diuresis ?
(1) Decrease in secretion of renin by JG cells
(2) More water reabsorption due to under secretion of ADH
(3) Reabsorption of Na^+ and water from renal tubules due to aldosterone
(4) Atrial natriuretic factor causes vasoconstriction

NEET (UG) 2020 (COVID-19)

29. The increase in osmolarity from outer to inner medullary interstitium is maintained due to :-
(i) Close proximity between Henle's loop and vasa recta
(ii) Counter current mechanism
(iii) Selective secretion of HCO_3^- and hydrogen ions in PCT
(iv) Higher blood pressure in glomerular capillaries
(1) Only(ii) (2) (iii) and (iv)
(3) (i), (ii) and (iii) (4) (i) and (ii)

30. Select the correct statement :-
(1) Atrial Natriuretic Factor increases the blood pressure.
(2) Angiotensin II is a powerful vasodilator.
(3) Counter current pattern of blood flow is not observed in vasa recta.
(4) Reduction in Glomerular Filtration Rate activates JG cells to release renin.

NEET (UG) 2021

31. Erythropoietin hormone which stimulates R.B.C. formation is produced by :-
(1) Alpha cells of pancreas
(2) The cells of rostral adenohypophysis
(3) The cells of bone marrow
(4) Juxtaglomerular cells of the kidney

NEET (UG) 2022

32. Nitrogenous waste is excreted in the form of pellet or paste by :-
(1) *Salamandra* (2) *Hippocampus*
(3) *Pavo* (4) *Ornithorhynchus*

RE-NEET (UG) 2022

33. Select the **correct** statements.
(a) Angiotensin II activates the cortex of adrenal gland to release aldosterone.
(b) Aldosterone leads to increase in blood pressure.
(c) ANF acts as a check on renin-angiotensin mechanism.
(d) ADH causes vasodilation.
(e) Vasopressin is released from adenohypophysis.
Choose **the most appropriate answer** from the options given below :-
(1) (a), (b) and (e) only
(2) (c), (d) and (e) only
(3) (b), (c) and (d) only
(4) (a), (b) and (c) only

EXERCISE-I (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	3	1	4	4	1	4	1	2	1	1	1	1	3	2	4
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	3	4	1	4	4	2	2	2	3	2	3	3	4	4
Question	31	32	33												
Answer	4	3	4												

TG: @Chalnaayaaar

Exercise - III — Master Your Understanding

EXERCISE-III(A) (NCERT BASED QUESTIONS)

1. Ureter, blood vessels and nerves enter in to the kidney through :-
(1) Pelvis (2) Hilum
(3) Convex surface (4) Pyramids

2. Excretory organ in prawn is
(1) Green gland (2) Malpighian tubules
(3) Kidney (4) Nephridia

3. Which of the following condition can activate the JG cells to release renin?
(1) More Na^+ in blood plasma
(2) More blood volume
(3) High glomerular blood pressure
(4) Fall in GFR

4. Match the following :-

	Column-I	Column-II
A	PCT	(i) Selective secretion of H^+ and K^+ ions.
B	DCT	(ii) 70-80 percent of electrolytes and water reabsorbed
C	Descending limb	(iii) Allow passage of small amount of urea.
D	Ascending limb	(iv) Permeable to water
E	Collecting duct	(v) Permeable to salts

(1) A-(i), B-(ii), C-(iii), D-(iv), E-(v)
(2) A-(i), B-(iii), C-(iv), D-(ii), E-(v)
(3) A-(ii), B-(i), C-(iv), D-(v), E-(iii)
(4) A-(ii), B-(i), C-(v), D-(iv), E-(iii)

5. Which of the following part of Nephron is situated in the cortex of kidney ?
(1) Malpighian Corpuscles
(2) PCT
(3) DCT
(4) All the above

6. Kidney stone is formed of: -
(1) Cholesterol (2) Calcium oxalate
(3) Urea (4) $MgPO_4$

TG: @Chalnaayaaar

7. The Glomerular capillary blood pressure causes filtration of blood through?
(1) Endothelium of glomerular blood vessels
(2) The Epithelium of Bowman's capsule
(3) Basement membrane between these two layers
(4) All the above

8. Which of the following substances are absorbed by passive transport?
(1) Glucose (2) Amino acids
(3) Na^+ (4) Bicarbonate ions

9. Which of the following play a significant role in the maintenance of high osmolarity of medulla interstitial fluid?
(1) NH_4^+ (2) DCT
(3) PCT (4) NaCl and urea

10. Maximum reabsorption of Na^+ and water takes place in which segment of Nephron?
(1) PCT (2) Loop of Henle
(3) Bowman's capsule (4) DCT

11. Which of the following hormone causes vaso-constriction?
(1) ANF (2) Aldosterone
(3) ADH (4) ACTH

12. Excretion of Na^+ in urine is elevated by: -
(1) ANF (2) ADH
(3) ACTH (4) Aldosterone

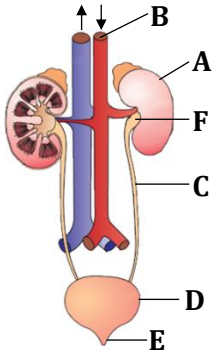
13. The presence of ketone bodies in urine are indicative of?
(1) Diabetes insipidus (2) Diabetes mellitus
(3) Starvation (4) Both (2) and (3)

14. Which of nitrogenous waste is eliminated through saliva?
(1) Urea (2) Creatine
(3) HCO_3^- (4) Uric acid

15. Urine of a human being suffering from diabetes insipidus is:-
(1) Tasteless and thick
(2) Sweet and thick
(3) Tasteless and watery
(4) Sweet and watery

TG: @Chalnaayaaar

16. In the diagram of excretory system of human beings given below, different parts have been indicated by alphabets choose the answer in which these alphabets have been correctly matched with the parts which they represent



(1) A = Kidney, B = Abdominal aorta, C = Ureters, D = Urinary bladder, E = Urethra, F = Renal pelvis

(2) A = Kidney, B = Abdominal aorta, C = Urethra, D = Urinary bladder, E = Ureters, F = Renal pelvis

(3) A = Kidney, B = Renal pelvis, C = Urethra, D=Urinary bladder,E = Ureters, F = Renal relvis

(4) A = Kidney, B = Abdominal aorta, C = Urethra, D = Urinary bladder, E = Renal pelvis , F =Ureters

17. In human minor calyces number is :-

(1) Equal to pyramid number

(2) 14 to 20

(3) Uncountable

(4) Depends on major calyx number.

18. Medial surface of kidney are ____ while lateral surface is ____ :-

(1) convex, concave (2) concave, convex

(3) convex, convex (4) concave, concave

EXERCISE-III(B) (ANALYTICAL QUESTIONS)

19. How many of the following chordates have flame cells as excretory organ.

Planaria, *Ascaris*, *Amphioxus*, Tapeworm, *Nereis*, *Scoliodon*.

(1) One (2) Two

(3) Three (4) Four

TG: @Chalnaayaaar

20. Read statements A-D :-

(A) When some one drinks lot of water, ADH release is decreased.

(B) Exposure to cold temperature suppress ADH release

(C) Caffeine in Tea and coffee increase sodium absorption from DCT and collecting ducts

(D) ADH also cause vasodilation

Which statements are correct

(1) A and C (2) A and B

(3) C and D (4) B and D

21. The human kidney: -

(1) Concentrates the urine by actively transporing water out of the filtrate.

(2) Produces more dilute urine when the collecting ducts become less permeable to water.

(3) Responds to antidiuretic hormone by increasing urine output.

(4) Gets rid of urea from the body by secreting it into the descending arm of the loop of Henle.

22. Layers between the glomerulus and Bowman's capsule through which the filtration takes place are

I. endothelium of the glomerular blood vessel.

II. middle lamella.

III. basement membrane between the endothelium of glomerular blood vessels and epithelium of the Bowman's capsule.

IV. epithelium of the Bowman's capsule.

(1) I, II and III (2) II, III and IV

(3) I, III and IV (4) I, II and IV

23. Large amount of water is ....A... from collecting duct to produce ...B... urine. This segment allows passage of small amounts of ...C... into interstitium of medulla to keep up the osmolarity. Here, A, B and C refers to

(1) A- secreted, B-dilute, C-sugar

(2) A- secreted, B-dilute, C-NH_3

(3) A- secreted, B-dilute, C-urea

(4) A- reabsorbed, B-concentrated, C-urea

24. Suppose you are developing a new drug, and have found that when it is administered in humans there is a substantial increase in the volume of urine produced. When you administer antidiuretic hormone (ADH or vasopressin) at the same time, the volume of urine returns to normal. Which hypothesis best fits these observations? The new drug?
(1) Blocks the receptors for ADH on the collecting of the kidney.
(2) Blocks the release of ADH from the pituitary
(3) Mimics the action of ADH
(4) Decreases blood pressure

25. In a comparison of amounts of urea in human urine, the largest amount of urea would be found with a diet very rich in :-
(1) Animal fat
(2) Simple carbohydrates (sucrose)
(3) Complex carbohydrates (starches)
(4) Protein

26. Identify the correct match from the column I, II and III :-

	Column I	Column II	Column III
(1)	PCT	(a) podocytes	(i) small amount of urea enter into it
(2)	Inner wall of Bowmans capsule	(b) simple squamous	(ii) conditional reabsorption
(3)	Thin ascending segment of loop of Henle	(c) cuboidal epithelium with less brush border	(iii) part of filtration membrane
(4)	DCT	(d) cuboidal epithelium with more brush border	(iv) maximum reabsorption of salt and electrolytes

(1) 1 – c – iv; 2 – a – iii; 3 – b – i; 4 – d – ii
(2) 1 – d – iv; 2 – a – iii; 3 – b – i; 4 – c – ii
(3) 1 – b – iv; 2 – a – iii; 3 – d – i; 4 – c – ii
(4) 1 – d – iv; 2 – a – iii; 3 – b – ii; 4 – c – i

TG: @Chalnaayaaar

27. During hemodialysis process
I. blood drained from a convenient artery and anticoagulant is added (heparin).
II. removal of nitrogenous waste from blood.
III. blood is passed through a coiled porous cellophane membrane of tube bathing in dialysis fluid.
IV. blood is mixed with anti heparin and passed into vein.
Arrange the steps
(1) I → II → III → IV (2) IV → III → II → I
(3) I → III → II → IV (4) I → IV → II → III

28. Which of the following statement is/are true?
I. Glomerular filtrate is isotonic to plasma.
II. When the urine passes into collecting tubule, it becomes hypotonic.
III. Filtrate is isotonic in proximal convoluted tubule.
IV. Filtrate becomes more and more hypotonic as it passes through descending limb of Henle's loop.
Choose the correct option :-
(1) I and III (2) I, II and III
(3) II and III (4) Only II

29. Which of the following features activates the JG cells?
I. Fall in Glomerular blood pressure
II. Fall in Glomerular blood flow
III. Fall in GFR
Choose the correct option
(1) I and II (2) II and III
(3) I and III (4) I, II and III

30. Which of the following is responsible for excretion of dilute urine ?
(1) More secretion of Renin
(2) Less secretion of vasopressin
(3) More secretion of aldosterone
(4) Less secretion of K^+ into the filtrate

31. When a person is suffering from poor renal absorption which one of the following factor will not help in maintenance of blood volume?
(1) Decreased glomerular filtration
(2) Increased ADH secretion
(3) Decreased arterial pressure in kidney
(4) Increased arterial pressure in kidney

TG: @Chalnaayaaar

32. In response to decrease in blood volume and blood pressure which of the following does not occur?
(1) Secretion of Renin
(2) Secretion of aldosterone
(3) Secretion of vasopressin
(4) Secretion of ANF

33. Indicate whether the following statements are true (T) or false (F).
a. Micturition is carried out by a reflex.
b. ADH helps in water elimination, making the urine hypotonic.
c. Protein-free fluid is filtered from blood plasma into the Bowman's capsule.
d. Henle's loop plays on important role in concentrating the urine.
e. Glucose is actively reabsorbed in the proximal convoluted tubule.
(1) a - T, b - F, c - T, d - T, e - T
(2) a - T, b - F, c - T, d - F, e - T
(3) a - F, b - T, c - F, d - T, e - F
(4) a - T, b - F, c - F, d - T, e - T

34. Read the following points :-
(i) Increases GFR
(ii) Increases B.P.
(iii) Decreases blood volume
(iv) Increases aldosterone secretion
(v) Vasoconstrictor
(vi) Increases Na^+ excretion
How many points are correct about Angiotensin II?
(1) Two (2) Three (3) Four (4) Five

35. The amount of glucose present in urine of normal man is :-
(1) 0 mg/ml (2) 120 mg/ml
(3) 40 mg/ml (4) 5 mg/ml

36. You and your study partner want to draw the pathway that controls the reabsorption of sodium ion when blood pressure falls. Which of the following is the correct sequence of events?
(a) Aldosterone is released
(b) Kidney tubules reabsorb Na^+
(c) Renin is released
(d) Juxtaglomerular apparatus (JGA) recognizes a drop in blood pressure.
(e) Angiotensin II is produced
(1) a, c, e, b, d (2) d, b, c, a, e
(3) d, c, e, a, b (4) b, d, c, a, e

37. Ketonuria is :-
(1) albumin in urine
(2) globulin in urine
(3) ketone bodies in urine
(4) glucose in urine

38. Which of the following statements are not incorrect?
(i) Liver, the largest gland in our body secretes cholesterol, degrade steroid hormones, vitamins and drugs
(ii) Sebaceous glands eliminate certain substances like urea, sterols and sebum
(iii) Sweat produced by sweat glands is a oily fluid containing NaCl
(iv) In uremic patients urea and glucose can be removed by a process called hemodialysis
(1) i, ii, iii (2) i, ii, iv
(3) i only (4) i, ii, iv

39. I. ADH
II. Renin-angiotensin
III. ANF
IV. Counter-current mechanism
Choose the option containing factors, which regulates the osmoregulation of body fluids ?
(1) I, II and III (2) II, III and IV
(3) I, II and IV (4) All of the above

40. An increase in the body fluid volume can switch off the ...A... and ...B... the ADH release. In this way complete the ...C... .
Choose the correct option for A, B and C.
(1) A-osmoreceptors, B-increase, C-feedback
(2) A-osmoreceptors, B-suppress, C-feedback
(3) A-kidney filtration, B-increase, C-feedback
(4) A-kidney filtration, B-suppress, C-feedback

TG: @Chalnaayaaar

Exercise - III ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	1	4	3	4	2	4	4	4	1	3	1	4	1	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	1	2	1	2	2	3	4	2	4	2	3	1	4	2
Question	31	32	33	34	35	36	37	38	39	40					
Answer	4	4	1	3	1	3	3	3	4	2					